

CLAIMS

1. A mast for a lift truck which comprises:

a base section having a pair of spaced, upright base rail members attached to the lift truck;

an outer telescopic section having a pair of spaced, upright mid rail members slidably attached to the pair of base rail members and disposed laterally inward therefrom;

an inner telescopic section having a pair of spaced, upright top rail members slidably attached to the pair of mid rail members and disposed laterally inward therefrom;

a pair of lift chain pulleys, one mounted to the upper end of each mid rail member and each being disposed forward of the top rail members of the inner telescopic section;

a pair of lift chains, one disposed over each of the lift chain pulleys and having one end connected to the base rail member and a second end connected to the top rail member; and

a pair of main lift cylinders connected between the base section and the outer telescopic section and being operable to extend the mast upward by sliding the outer telescopic section with respect to the base section.

2. The mast as recited in claim 1 in which each main lift cylinder is disposed to the rear of one of said respective base rail members.

3. The mast as recited in claim 1 which includes:

a carriage slidably mounted to the inner telescopic section; and

a pair of free lift cylinders mounted to the inner telescopic section and being operable to slide the carriage up and down the inner telescopic section, said free lift cylinders being disposed to the rear of the inner telescopic section.

4. The mast as recited in claim 3 in which one of said free lift cylinders is connected to one of said top rail members and substantially laterally aligned therewith, and the other free lift cylinder is connected to the other top rail member and laterally aligned inboard of said other top rail member.

5. The mast as recited in claim 4 in which the free lift cylinders each include a rod having a chain pulley mounted to its end, and a pair of free lift chains extend over the respective chain pulleys and connect to the carriage.

6. The mast as recited in claim 5 in which a hose pulley is mounted to the end of the rod associated with said other free lift cylinder, and hoses extend over the hose pulley and connect to the carriage.

7. The mast as recited in claim 4 in which a hose pulley is mounted to the upper end of the outer telescopic section, the hose pulley being aligned laterally between one of said main lift cylinders and the other of said free lift cylinders and being disposed to the rear of the mid rail member of said outer telescopic section.

8. The mast as recited in claim 1 in which the base rail members each have a c-shaped cross section formed by a web and forward and rear flanges; the mid rail members each have an I-shaped cross section which is disposed laterally inboard the base rail member web and between the base rail member flanges; and the top rail members each have an I-shaped cross section formed by a web and forward and rear flanges, the top rail members each being disposed laterally inboard from both the base rail members and the mid rail member with their rear flanges substantially aligned with the rear flanges of the base rail members.

9. The mast as recited in claim 8 in which each lift chain pulley extends through the web portion of the mid rail member to which it mounts.

10. The mast as recited in claim 1 in which each mid rail member has a web portion and a forward flange; the top rail member has a web and a forward flange; and the lift chain pulleys are rotatably mounted in openings in the web portion of each respective mid rail member with their axes of rotation in the fore and aft direction, and wherein the lift chain pulleys are positioned between the forward flanges of the mid rail member and the top rail member.

11. A mast column for a lift truck which comprises:

a base rail member having a c-shaped cross section formed by a web portion and forward and rear flange portions;

5 a mid rail member slidably mounted to the base rail member and having an I shaped cross section with a web portion and a forward flange portion, the mid rail member being disposed substantially between the forward and rear base rail member flanges; and

a top rail member slidably mounted to the mid rail member and having an I-shaped cross section formed by a web and forward and rear flange portions, the top rail member being disposed alongside and inward from the mid rail member with its rear flange
10 substantially aligned in the fore and aft direction with the rear flange of the base rail member.

12. The mast column as recited in claim 11 in which a lift chain pulley is rotatably mounted to the mid rail member and positioned forward of the forward flange on the top rail member.

13. The mast column as recited in claim 12 in which the lift chain pulley extends through an opening in the mid rail member web portion with its axis of rotation oriented in the fore and aft direction, and the lift chain pulley is disposed between the forward flanges of the mid rail member and the top rail member.